

WHAT IS CLAIMED IS:

1. A lubricating oil composition comprising (a) a major amount of a base oil of lubricating viscosity and (b) a minor deposit-inhibiting effective amount of a reaction product prepared by transesterifying at least one glycerol ester and at least one non-  
5 glycerol polyol ester.

2. The lubricating oil composition of Claim 1, wherein the glycerol ester is a mixed glycerol fatty acid ester.

10 3. The lubricating oil composition of Claim 1, wherein the glycerol ester is a C<sub>4</sub> to about C<sub>75</sub> glycerol fatty acid ester.

4. The lubricating oil composition of Claim 1, wherein the glycerol ester is a vegetable oil.

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5. The lubricating oil composition of Claim 4, wherein the vegetable oil is selected from the group consisting of corn oil, rapeseed oil, soybean oil, and sunflower oil.

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6. The lubricating oil composition of Claim 5, wherein the rapeseed oil is canola oil.

7. The lubricating oil composition of Claim 1, wherein the non-glycerol polyol ester is a trimethylolpropane ester.

8. The lubricating oil composition of Claim 1, wherein the non-glycerol polyol ester is trimethylolpropane triheptanoate.

9. The lubricating oil composition of Claim 1, wherein the glycerol ester is a vegetable oil and the non-glycerol polyol ester is a trimethylolpropane ester.

10. The lubricating oil composition of Claim 1, wherein the glycerol ester is canola oil and the non-glycerol polyol ester is trimethylolpropane triheptanoate.

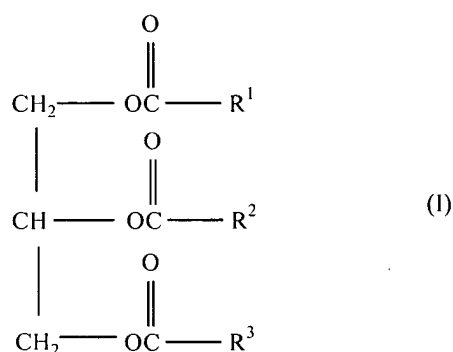
11. The lubricating oil composition of Claim 1 wherein the minor deposit-inhibiting effective amount of the reaction product is about 0.05 to about 10 wt. %, based on the total weight of the composition.

12. The lubricating oil composition of Claim 1 wherein the minor deposit-inhibiting effective amount of the reaction product is about 0.1 to about 8 wt. %, based on the total weight of the composition.

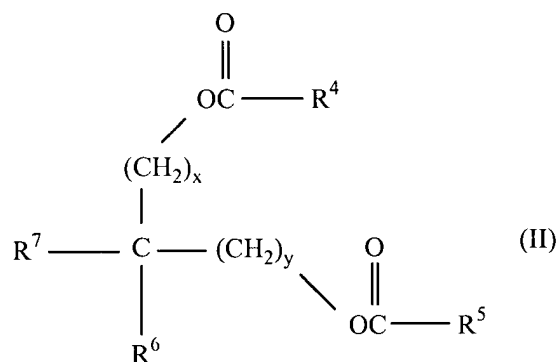
13. The lubricating oil composition of Claim 1 wherein the minor deposit-inhibiting effective amount of the reaction product is about 0.2 to about 5 wt. %, based on the total weight of the composition.

14. The lubricating oil composition of Claim 10 wherein the minor deposit-inhibiting effective amount of the reaction product is about 1 to about 5 wt. %, based on the total weight of the composition.

- 5 15. A lubricating oil composition comprising (a) a major amount of a base oil of lubricating viscosity and (b) a minor deposit-inhibiting effective amount of a reaction product of at least one first polyol ester of the general formula:

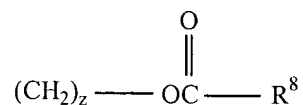


- 10 wherein  $\text{R}^1$ ,  $\text{R}^2$  and  $\text{R}^3$  are independently aliphatic hydrocarbyl moieties having 4 to about 75 carbon atoms; and at least one second polyol ester of the general formula:



wherein x and y are the same or different and are integers from 1 to 6,  $\text{R}^4$  and  $\text{R}^5$  are independently aliphatic hydrocarbyl moieties having 4 to 24 carbon atoms and  $\text{R}^6$  and  $\text{R}^7$

are independently hydrogen, an aliphatic hydrocarbyl moiety having 1 to 10 carbon atoms or



wherein z is an integer from 0 to 6 and R<sup>8</sup> is an aliphatic hydrocarbyl moiety having 4 to

5 24 carbon atoms.

16. The lubricating oil composition of Claim 15 wherein the base oil of lubricating viscosity is comprised of a mineral base oil.

10 17. The lubricating oil composition of Claim 15 wherein the base oil of lubricating viscosity is comprised of a polyalphaolefin base oil.

18. The lubricating oil composition of Claim 15 wherein R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> of the first polyol ester are independently selected from an aliphatic hydrocarbyl moiety having 4 to  
15 24 carbon atoms, wherein at least one of R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> is a saturated aliphatic hydrocarbyl moiety having 4 to 10 carbon atoms, and wherein at least one of R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> is an aliphatic hydrocarbyl moiety having from 11 to 24 carbon atoms.

19. The lubricating oil composition of Claim 18 wherein the aliphatic  
20 hydrocarbyl moiety having from 11 to 24 carbon atoms is derived from a fatty acid selected from the group consisting of oleic acid, eicosenoic acid and erucic acid.

20. The lubricating oil composition of Claim 15 wherein the first polyol ester is canola oil and the second polyol ester is a trimethylolpropane (TMP) ester selected from the group consisting of TMP tri(2-ethyl hexanoate), TMP triheptanoate (TMP<sub>TH</sub>), TMP tricaprylate, TMP tricaprinate, TMP tri(isononanoate) and TMP trioleate.

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21. The lubricating oil composition of Claim 15 wherein the first polyol ester is canola oil and the second polyol ester is TMP triheptanoate (TMP<sub>TH</sub>).

22. The lubricating oil composition of Claim 15 wherein the minor deposit-  
10 inhibiting effective amount of the reaction product is about 0.05 to about 10 wt. %, based on the total weight of the composition.

23. The lubricating oil composition of Claim 15 wherein the minor deposit-  
inhibiting effective amount of the reaction product is about 0.1 to about 8 wt. %, based on  
15 the total weight of the composition.

24. The lubricating oil composition of Claim 15 wherein the minor deposit-  
inhibiting effective amount of the reaction product is about 0.2 to about 5 wt. %, based on  
the total weight of the composition.

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25. The lubricating oil composition of Claim 21 wherein the minor deposit-  
inhibiting effective amount of the reaction product is about 0.2 to about 5 wt. %, based on  
the total weight of the composition.

26. The lubricating oil composition of Claim 15 wherein the composition has an SAE Viscosity Grade of 0W, 0W-20, 0W-30, 0W-40, 0W-50, 0W-60, 5W, 5W-20, 5W-30, 5W-40, 5W-50, 5W-60, 10W, 10W-20, 10W-30, 10W-40, 10-50, 15W, 15W-20, 15W-30 or 15W-40.

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27. The lubricating oil composition of Claim 15 having a phosphorous content not exceeding 0.08 wt. %, based on the total weight of the composition.

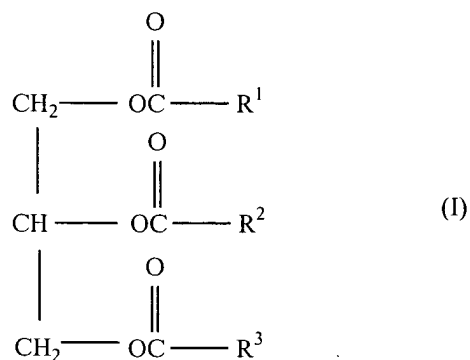
28. The lubricating oil composition of Claim 20 having a phosphorous content  
10 not exceeding 0.05 wt. %, based on the total weight of the composition.

29. The lubricating oil composition of Claim 27 having a sulfur content not exceeding 0.2 wt. %, based on the total weight of the composition.

15 30. The lubricating oil composition of Claim 28 having a sulfur content not exceeding 0.2 wt. %, based on the total weight of the composition.

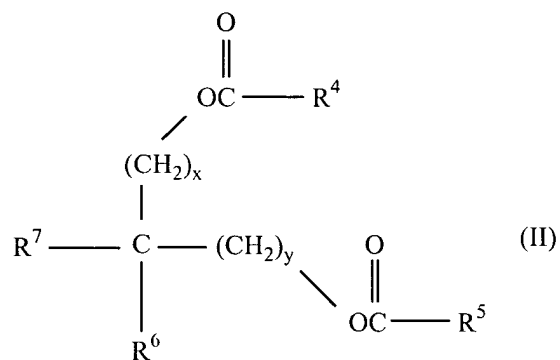
31. The lubricating oil composition of Claim 15 further comprising at least one additive selected from the group consisting of metallic detergents, ashless dispersants,  
20 friction modifiers, extreme pressure agents, viscosity index improvers and pour point depressants such that the phosphorous content of the lubricating oil composition is no greater than 0.08 wt. % and the sulfur content of the lubricating oil composition is no greater than 0.2 wt. %, based on the total weight of the composition.

32. A method of operating an internal combustion engine comprising operating the internal combustion engine with a lubricating oil composition comprising (a) a major amount of a base oil of lubricating viscosity and (b) a minor deposit-inhibiting effective amount of a reaction product of at least one first polyol ester of the general formula:

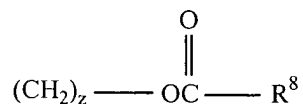


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wherein  $\text{R}^1$ ,  $\text{R}^2$  and  $\text{R}^3$  are independently aliphatic hydrocarbyl moieties having 4 to about 75 carbon atoms; and at least one second polyol ester of the general formula:



10 wherein x and y are the same or different and are integers from 1 to 6,  $\text{R}^4$  and  $\text{R}^5$  are independently aliphatic hydrocarbyl moieties having 4 to 24 carbon atoms and  $\text{R}^6$  and  $\text{R}^7$  are independently hydrogen, an aliphatic hydrocarbyl moiety having 1 to 10 carbon atoms or



wherein z is an integer from 0 to 6 and R<sup>8</sup> is an aliphatic hydrocarbyl moiety having 4 to 24 carbon atoms.

5            33. The method of Claim 32 wherein the base oil of lubricating viscosity is comprised of a mineral base oil.

34. The method of Claim 32 wherein the base oil of lubricating viscosity is comprised of a polyalphaolefin base oil.

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35. The method of Claim 32 wherein R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> of the first polyol ester are independently selected from an aliphatic hydrocarbyl moiety having 4 to 24 carbon atoms, wherein at least one of R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> is a saturated aliphatic hydrocarbyl moiety having 4 to 10 carbon atoms, and wherein at least one of R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> is an aliphatic  
15 hydrocarbyl moiety having from 11 to 24 carbon atoms.

36. The method of Claim 35 wherein the aliphatic hydrocarbyl moiety having from 11 to 24 carbon atoms is derived from a fatty acid selected from the group consisting of oleic acid, eicosenoic acid and erucic acid.

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37. The method of Claim 32 wherein the first polyol ester is canola oil and the second polyol ester is a trimethylolpropane (TMP) ester selected from the group



consisting of TMP tri(2-ethyl hexanoate), TMP triheptanoate (TMP<sub>TH</sub>), TMP tricaprylate, TMP tricaprinate, TMP tri(isononanoate) and TMP trioleate.

38. The method of Claim 32 wherein the first polyol ester is canola oil and the  
5 second polyol ester is a TMP triheptanoate.

39. The method of Claim 32 wherein the minor deposit-inhibiting effective  
amount of component (b) of the lubricating oil composition is about 0.05 to about 10 wt.  
%, based on the total weight of the composition.

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40. The method of Claim 32 wherein the minor deposit-inhibiting effective  
amount of component (b) of the lubricating oil composition is about 0.1 to about 8 wt. %,  
based on the total weight of the composition.

15 41. The method of Claim 32 wherein the minor deposit-inhibiting effective  
amount of component (b) of the lubricating oil composition is about 0.2 to about 5 wt. %,  
based on the total weight of the composition.

42. The method of Claim 32 wherein the lubricating oil composition has an SAE  
20 Viscosity Grade of 0W, 0W-20, 0W-30, 0W-40, 0W-50, 0W-60, 5W, 5W-20, 5W-30,  
5W-40, 5W-50, 5W-60, 10W, 10W-20, 10W-30, 10W-40, 10W-50, 15W, 15W-20, 15W-  
30 or 15W-40.

43. The method of Claim 32 wherein the lubricating oil composition has a phosphorous content not exceeding 0.08 wt. %, based on the total weight of the composition.

5           44. The method of Claim 32 wherein the lubricating oil composition has a phosphorous content not exceeding 0.05 wt. %, based on the total weight of the composition

          45. The method of Claim 43 wherein the lubricating oil composition has a sulfur  
10   content not exceeding 0.2 wt. %, based on the total weight of the composition.

          46. The method of Claim 44 wherein the lubricating oil composition has a sulfur content not exceeding 0.2 wt. %, based on the total weight of the composition.

15           47. The method of Claim 32 wherein the lubricating oil composition further comprises at least one additive selected from the group consisting of metallic detergents, ashless dispersants, friction modifiers, extreme pressure agents, viscosity index improvers and pour point depressants such that the phosphorous content of the lubricating oil composition is no greater than 0.08 wt. % and the sulfur content of the lubricating oil  
20   composition is no greater than 0.2 wt. %, based on the total weight of the composition.